The impact of Translation equivalence on Tunisian EFL learners' vocabulary knowledge and word-learnability.

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Abstract: One of the most pivotal challenges that learners may face, during foreign language learning, is building a reliable lexicon. Insufficient vocabulary knowledge may put serious obstacles in the foreign language learning process. Thus, students need to equip themselves with different strategies to cope with these difficulties. Translation equivalence (TE) is one of these strategies. Since the success or failure of any vocabulary learning strategy depends on two main factors: developing the learners' vocabulary knowledge and the extent of difficulty or ease with which the learner acquires new words, this research aims at investigating the impact of this strategy on EFL learners' vocabulary knowledge and word learnability. 258 Tunisian 9th graders participated in this project. Two vocabulary recognition tests, one using translation equivalence and the other using only-English strategies, were used to test the hypotheses. Different statistical tests and techniques were employed to analyze data. Findings showed that TE has a positive impact on learners' vocabulary knowledge and revealed that students, at this level of proficiency, learn vocabulary through translation better than any other strategy using only English.

Keywords: Translation equivalence (TE), translation equivalents (TEs), vocabulary knowledge, receptive vocabulary, word learnability.

1. Introduction

In the last few decades, research literature on foreign language learning strategies, particularly in multilingual contexts, has witnessed a tremendous growth. Cross-linguistic influences and their impact on the process of language learning has attracted the attention of experts from many different fields such as applied linguistics, psycholinguistics, and cognitive psychology. The mechanisms involved in the comprehension and production in two or more languages have been thoroughly examined in terms of lexis, phonetics, and grammar. Vocabulary learning is at the heart of the process of language learning and use, and it is a language threshold and an indispensable condition to learn the other skills (Laufer, 1997, p. 21). Also, basic communicative competence is largely concerned with the strategies the learners use to solicit the vocabulary they need in order to get the meanings across.

The success or failure of translation as a vocabulary learning strategy depends on two main factors: the learners' vocabulary knowledge and the extent of word-learnability. Having many dimensions and criteria, vocabulary knowledge in this study is regarded from the perspective of the receptive knowledge the learners acquire. Word learnability, also, is a very important measure since it shows the degree of ease or difficulty with which the students learn new words using this strategy of translation.

In fact, this study addresses two main questions:

1.   Do learners who have a relatively higher extent of translation equivalence (TE) use differ significantly from those who have a lower extent at the level of vocabulary knowledge?

(Null hypothesis: There is no significant difference between learners who have a relatively higher extent and those who have a lower extent of TE use in terms of vocabulary knowledge.)

2.   Does TE have a greater impact on word learnability than other strategies employing only English in learning vocabulary?

(Null hypothesis: Translation Equivalence has no greater impact on word learnability than other strategies employing only English in vocabulary learning.)

2. Review of literature

2.1 Translation Equivalence:

The construction of bilingual or multilingual lexica, particularly for young learners and beginners, is carried out by establishing translation links between lexical items in the native language (L1) and their equivalents in the target language (TL). Translation equivalents (TEs) are words that learners acquire in each of their languages for the same concept. Oxford (1990, p. 46) defined translating as converting the TL expressions into the first language (at various levels, from words and phrases all the way up to whole texts), or converting the native language into the target language using one language as the basis for understanding or producing another.

Masrai & Milton (2015b, p. 1) considered that critical vocabulary acquisition is established through mapping second language (L2 / It refers to any language other than the learners' L1) words from the existing L1 meaning and they classified L2 acquired words into two categories; those with direct TEs and those with non-direct TEs.

Snell-Hornby (1988, p. 17) maintained that the word 'equivalence' has been used in English as a technical term to refer to a number of processes. For instance, it indicates the relationship of absolute equality, in mathematics, that involves guaranteed reversibility. However, this word can be used, also, in the general vocabulary of English to denote 'similar significance' between words. Therefore, 'equivalence' can be considered as a measure of semantic similarity between lexical items in different languages.

Philosophically speaking, there do not exist two absolutely identical things. Nida (1986, p. 60) supports this opinion by stating that there are no stones that are alike and no flowers that are the same. Ivir (1981, p. 53) defines 'equivalence' as a matter of relational dynamics in a communicative act and compares it to a person's signature that comes out a little different visually in act of signing, yet it is recognized as 'same' as long as the characteristic features are preserved to ensure its 'equivalence'.

So, as far as languages are concerned, there are no absolute synonyms within one language and there are no two words in two languages that are completely identical in meaning. Equivalence refers to the semantic similarities between words in two different languages. Since translation is a phenomenon that concerns the interaction between two or more languages, it is necessary to understand it within the framework of the bilingual/multilingual mental lexicon and investigate its impact on EFL learners' vocabulary knowledge and the degree of ease or difficulty with which they learn new words.

2.2. Vocabulary knowledge:

The term 'vocabulary knowledge' seems to be confusing since many learners think that knowing vocabulary is simply knowing its forms. Many researchers in the field of foreign vocabulary acquisition have mentioned that several types of sub-knowledge are necessary in order to 'know a word'. Cronbach considered that defining the knowledge of a word is a leading source of confusion (Cronbach, 1942, p. 206). He distinguished between five aspects of lexical knowledge: 1. Generalization (knowing the definition of a word), 2. application (knowledge of the use of a word), 3. breadth of meaning (knowing different senses of a word), 4. precision of meaning (knowing how

to use the word in different situations), 5. and availability (knowing how to use the word productively) (Cronbach, 1942, pp. 206-207).

More recently, Nation (as cited in Bogaards, 2000, p. 491) has suggested four dimensions of lexical knowledge: 1. The form (Written or spoken), 2. The position (grammar and collocations), 3. The function (frequency and appropriateness), and 4. The meaning (conceptual and associative). Also, Laufer (1997) tried to write a list of the aspects of vocabulary knowledge after reviewing several researches dealing with the definition of words. This list included word form (e.g. Pronunciation and spelling), word structure (e.g. roots, derivations, and inflections), its syntactic patterns, its multiple meanings (e.g. metaphorical, affective, and pragmatic meanings), and its relations with other words (e.g. synonyms, antonyms, hyponyms, and collocations).

Milton (2009, p. 13) considers that being able to use words effectively includes many types of knowledge. The most important among these types of knowledge are the receptive/productive knowledge and breadth/depth of words. Receptive knowledge refers to the words that are recognized when listening or reading, whereas productive knowledge refers to the words that are used during speaking or writing. The second type of knowledge is the depth and breadth of words. Breadth of knowledge refers to the vocabulary size that is the number of words a learner knows, whereas depth of knowledge refers to what the learner knows about these words.

2.3. The impact of translation on vocabulary knowledge:

The successfulness of a vocabulary learning strategy, like translation, can be evaluated by its impact on vocabulary knowledge. Several studies have demonstrated that L1 is active during L2 lexical processing in both beginning and more advanced learners (e.g. Hall, 2002, p. 82; Sunderman & Kroll, 2006, p. 418) and that learners need support to work out the meanings of new words. These researches demonstrated that giving learners a translation into their L1 may really help in the process of learning the vocabulary of the TL (Cameron, 2001, p. 210).

Correspondingly, Khan (2016, p. 134) tried to explore the effect of L1 use on foreign language vocabulary learning among Saudi EFL learners. Findings showed evidence that learning English as foreign language is greatly helped by the use of translation.

Likewise, Joyce (2015, p. 1) conducted a research on 48 Japanese learners of English to investigate the effect of using L1 translations versus L2 definitions on L2 vocabulary knowledge. The findings showed that the learners' recognition of the L2 lexical items was considerably higher when they were asked to match the English words to their L1 translations than their L2 definitions.

Nonetheless, in the communicative approach, there is a general conviction that using translation has a little contribution to the foreign language development (Marqués-Aguado & Solís-Becerra, 2013, pp. 41-42). Also, through a replication study, Alroe & Reinders (2015, p. 39) inspected the findings of earlier researches showing that EFL learners could better learn new vocabulary through translation rather studying them in context. The results of this research showed that the group who learnt the words via translation did not do better than the two other groups who learnt them contextually (Alroe & Reinders, 2015, p. 50).

2.4. Word learnability:

Word learnability means the extent to which a word can be learned without difficulty. Bogaards & Laufer (2004, p. x) consider word learnability as a crucial factor in L2 vocabulary acquisition since it represents the ease or difficulty with which a given word can be learned. Laufer (2012, p. 5597) adds that the difficulties of learning words may be attributed to the interaction between the word and other words, the familiarity of the word to the learners either in their L1 or in the TL, and the word itself. In order to understand this difficulty, it is important to know the specific construction of the word. Word difficulty, indeed, implies mastering patterns of knowledge that learners are unfamiliar with. For example, words that refer to familiar concepts from L1 are easier to be learnt than words that denote non-existent concepts in L1 and a word with several meanings is more difficult than a word with one meaning.

2.5. *The impact of translation on word learnability*

Word learnability, in foreign language learning, is commonly influenced by two major variables: interlexical variables (related to the interaction between the new word and words the learner knows in L1 or any other previously acquired languages) and intralexical variables (a set of variables stemming from the word itself).

The interlexical factors include two major types of relationships between TL words and L1 words: the similarity of form (e.g. Cognates and deceptive cognates) and meaning relations (It is assumed that each word in L2 has an equivalent in L1) (Laufer, 1990, p. 147). Nation (1982, p. 21) provides evidence that translation of new words or translation altogether with L2 explanations is a more meaningful and a better method of presenting words than explaining them in L2 through synonyms or definitions. However, Laufer (1990, p. 151) opposes this view by considering that to be insufficient in case of words whose semantic areas do not overlap because part of the meaning will not be captured. She considers that translation affects word learnability positively only if one or several translation equivalents indeed exist (Laufer, 1990, p. 152).

Prince's experiment (1996), in this field, was one of the most important ones. It was carried out on French speakers learning English, at the pharmacy faculty of the university of Montpellier, in order to test their recall of newly learned words. In other words, this study was conducted to determine the relative pros and cons of context learning and translation learning as a function of learner proficiency. Findings showed evidence that less proficient students were, also, able to recall more items when they learnt the words in the translation condition.

Jarvis & Pavlenko (2008, pp. 175-176) state that learnability depends most on interlingual and objective criteria; ease and difficulty of learning will depend, to a great extent, on objective similarities or differences between L1 and L2.

Similarly, Milton & Masrai (2015b, p. 1) found evidence that initial vocabulary acquisition is established through mapping L2 words form to the existing L1 meaning. They, also, concluded from their research that was carried out on 156 male students randomly selected from two high schools in Saudi Arabia, that translation equivalence had a significant impact on student's word learnability; L2 words with direct Arabic TEs were better learned than words with non-direct Arabic TEs.

In another study, Masrai & Milton (2015a, p. 1) investigated word difficulty and learning among native Arabic learners of English as a foreign language (EFL), in Saudi Arabia. The findings of their project showed a large effect of repetition on word learnability that accounted for 60% of the variance, followed by translation equivalence, which explained 23% of the variance. These results suggested a durable effect of repetition and a modest influence of L1 TEs on L2 word learnability.

3. Materials and Methods

3.1. Research paradigm:

This research is a quantitative experimental research that aims to investigate the correlations between translation equivalence and Tunisian EFL learners' vocabulary knowledge and word-learnability.

3.2. Setting and participants:

This project took place in different preparatory schools in Tunisia. 9th graders are the target population. 258 Participants were selected using the cluster-random sampling in order to reach a good level of representation accuracy and give equal chances to all the members of the population to be selected. They were 113 males (44%) and 145 females (56 %).

They were all Tunisians with Arabic as their first language. They have attended English classes for four years to the time of data gathering (6th, 7th, 8th, and 9th grade of Basic Education).

3.3. Research Instruments::

The following research measures were used in this project:

3.3.1. A Receptive Vocabulary Knowledge test using Translation equivalents:

This receptive vocabulary recognition test was designed by the researcher in order to collect data about students' vocabulary knowledge. Students were given 30 English lexical items altogether with their parts of speech and asked whether they know the words or not. They had to prove their knowledge by providing L1 (Arabic) lexical equivalents.

3.3.2. A receptive Vocabulary test using Only-English strategies:

This receptive vocabulary test was, also, designed by the researcher in order to collect data about students' vocabulary knowledge. Students were given the same 30 English lexical items of the other test. They were asked whether they know the words or not. They had to prove their knowledge by giving a definition of the word, an English synonym, or by putting it in a clear context.

3.3.3. Criteria for choosing the lexical items:

All the lexical items used in this receptive test were lexicalized lemmas having direct translation equivalents. They were chosen from the Kilgarriff's list which is a British National Corpus (BNC) lemmatized list (Kilgarriff, 2006) that can be accessed from the following links:
  a.   ftp://ftp.itri.bton.ac.uk/bnc/lemma.num
  b.   https://www.kilgarriff.co.uk/bnc-readme.html#lemmatised

They were selected from different frequency levels: 50% of the words are high frequency words and 50% are low frequency ones. This was to check the learners' vocabulary knowledge on both levels of word frequency.

The selected lexical items belong to different parts of speech and they were crosschecked with the students' textbooks to ensure they had encountered them during lessons and they do exist in official programs. (See table 1 for more details)

Table 1. description of the lexical items of the receptive test.

Lemmas	Number in the list	frequency	Part of Speech
Time	53	183427	Noun
Year	60	163930	Noun
Provide	195	47923	Verb
Begin	211	43740	Verb
Although	215	43635	Conjunction
Family	218	42773	Noun
Information	242	38656	Noun
Water	261	35767	Noun
Perhaps	266	35039	Adverb
Market	318	30596	Noun
Suggest	344	28665	Verb
Available	367	27184	Adjective
Understand	409	24252	Verb
Sometimes	505	20517	Adverb
Poor	613	16579	Adjective
Dancing	5169	1126	Noun
Tolerate	5226	1102	Verb
Cage	5231	1100	Noun
Shy	5265	1089	Adjective
Inability	5268	1087	Noun
Hunt	5271	1086	Verb
Volunteer	5285	1080	Verb
Noisy	5301	1075	Adjective
Racism	5311	1069	Noun
Apologize	5353	1057	Verb
Actress	5376	1056	Noun
Waiter	5534	998	Noun
Donate	5689	956	Verb
Produce	6293	805	Verb
Handicapped	6296	804	Adjective

The first column of this table shows the selected lexical item for the receptive test. The second column presents their number in the BNC lemmatized list. The third column gives us their frequency, and the last column is about the parts of speech.

3.4. Reliability of the research instruments:

The reliability of the two instruments was calculated using the Cronbach's alpha coefficient. It ranged from 'very good' to excellent which means that the tests have an excellent internal consistency.

The following table (Table 2) summarizes the reliability outputs of the research instruments as generated by the SPSS software:

Table 2. Reliability of research instruments during the main study.

	Receptive Test (TE)	Receptive Test (Eng)
Cronbach's Alpha	**.929**	**.894**
Cronbach's Alpha Based on Standardized Items	.931	.900
Number of Items	30	30
Removed items	2	0
Valid cases	256	258
Excluded cases	0	0

3.5. Data Analysis methods:

3.5.1. Data handling and scoring:

The receptive vocabulary tasks were corrected manually and scored out of 30 marks for each test: 30 marks for English explanations and 30 marks for Arabic equivalents with one mark for each correct item and zero for each incorrect one. So, the values assigned in SPSS were: zero for incorrect answers and one for correct ones. The minimum expected score was zero and the maximum was 30.

It is worth mentioning that, during the correction of the vocabulary tests, some mistakes were tolerated (grammar and spelling mistakes) and some synonymous words were accepted.

3.5.2. Analytical techniques employed for the 1st RQ:

For the purpose of testing the first hypothesis, the two receptive tests were used (the test using translation equivalents and the test using only English). First, participants were classified according to their scores in the Arabic TE test into high and low achievers by a median split procedure in SPSS. Then, an independent samples t-test was performed with the total score of the two receptive tests (30+30=60), including both English explanations and Arabic TEs to represent the vocabulary knowledge of the subjects, as the test variable (also called dependent variable) and the score of the two groups (high and low achievers in the Arabic TE) as the grouping variable (the independent variable).

This analysis of the dependence was meant to compare the mean values of the normally distributed data and assume a model that could show that the difference in the mean score of the dependent variable was found because of the influence of the independent variable.

3.5.3. Analytical techniques employed for the 2nd RQ:

The second hypothesis was tested using the data collected through the receptive vocabulary tests, too. A paired samples t-test was performed. This statistical technique is commonly used to compare two population means where there are two samples in which observations in one sample could be paired with observations in the other sample.

The score of Arabic TE and the score of strategies using only English were the two variables to be compared in this paired samples t-test.

4. Results

4.1. TE and vocabulary knowledge:

To answer the first research question, it was hypothesized that There were no significant differences between learners who had a relatively higher extent of TE use and those who had a lower extent in terms of vocabulary knowledge. First, the independent samples t-test assumptions were tested. There were no significant outliers in the data as it was assessed by the inspection of a boxplot. Scores approximated a normal distribution as checked by the Shapiro-Wilks test ($p = .05$) and the Levene's Test proved the violation of homogeneity of variances ($p < .001$). This violation was

overcome by not using the pooled estimate for the error term for the t-statistic, but instead using an adjustment to the degrees of freedom using the Welch-Satterthwaite method. SPSS Statistics hides this information and simply labels the two options as "Equal variances assumed" and "Equal variances not assumed" without explicitly stating the underlying tests used. The next step consisted in using the Median Split technique to distinguish high achievers in the Arabic TE test from low achievers, then an independent samples t-test was performed. The median of the Arabic TE test, which represented the grouping variable, was 9.00 and two groups were created. The first group, that was assigned the value 1 in SPSS, was the one of low achievers whose scores were less than the median 9. The other group was the group of high achievers who obtained scores equal to or more than the median 9. The latter was assigned the value 2 in SPSS.

4.1.1. Analyzing group statistics and means:

Tables 3 shows descriptive statistics for the two groups: 1. The group of learners who obtained less than 9 in the Arabic TE test and 2. those who obtained 9 or more. The students who scored less than 9 were 128 students and the others who scored 9 and more were 130 students. A thorough study of the two groups' means indicated that the average obtained by the low achievers (M=7.05) was significantly lower than the one obtained by the high achievers (M=19.83), the fact that led to a mean difference (M1-M2) of -12.78 points in a 60-point test. So, the learners who obtained good marks in the Arabic TE test obtained higher marks in the receptive test in general and their scores were significantly different from those who had lower marks in the Arabic TE test. Thus, the null hypothesis could be rejected.

Table 3. Independent samples t-test Group Statistics

	Arabic TE Test Groups	N	Mean	Std. Deviation	Std. Error Mean
Receptive Test Total Score	1 (Low achievers)	128	7,0547	3,10526	,27447
	2 (High achievers)	130	19,8308	8,60876	,75504

However, this might be due to chance and the second table generated by SPSS should be investigated (Table 4).

4.1.2. Analyzing the independent samples t-test:

The second table (table 4) is composed of two major parts: The Levene's Test for Equality of Variances and the t-test for Equality of Means:

Table 4. Independent Samples t-test Output

		Receptive Test Total Score	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	85,677	
	Sig. (p)	,000	
t-test for Equality of Means	t	-15,808	-15,903
	df	256	162,464
	Sig. (2-tailed) (p)	,000	,000
	Mean Difference	-12,77608	-12,77608
	Std. Error Difference	,80820	,80338
	95 % Confidence Interval of the Difference — Lower	-14,36766	-14,36249
	95 % Confidence Interval of the Difference — Upper	-11,18451	-11,18967

This table provides two statistical tests: one test for the assumption of equality of variances of the two groups (low and high achievers) and the other test is for the assumption of inequality of variances.

The Levene's Test was used to decide which assumption to use; if p is not significant (Sig. ≥.05), the assumption is not violated and the column of the Equal Variances Assumed should be used. If p is statistically significant (Sig. ≤ .05), the variances are significantly different and the assumption of equal variances is violated. Consequently, the column of Equal Variances Not Assumed should be used.

In this case, the result of the Levene's Test showed F= 85.677 and p (Sig.) < .001. this indicates that the variances of the population are not assumed to be equal since p is less than .05. Thus, the second column results were used.

The results of the independent samples t-test showed a large difference in means between the two groups of high achievers and low achievers in the TE test with t = -15.903 and p (Sig.(2-tailed)) < .001. The following boxplot clarifies this difference:

Figure 1. Boxplot of mean difference between the two groups.

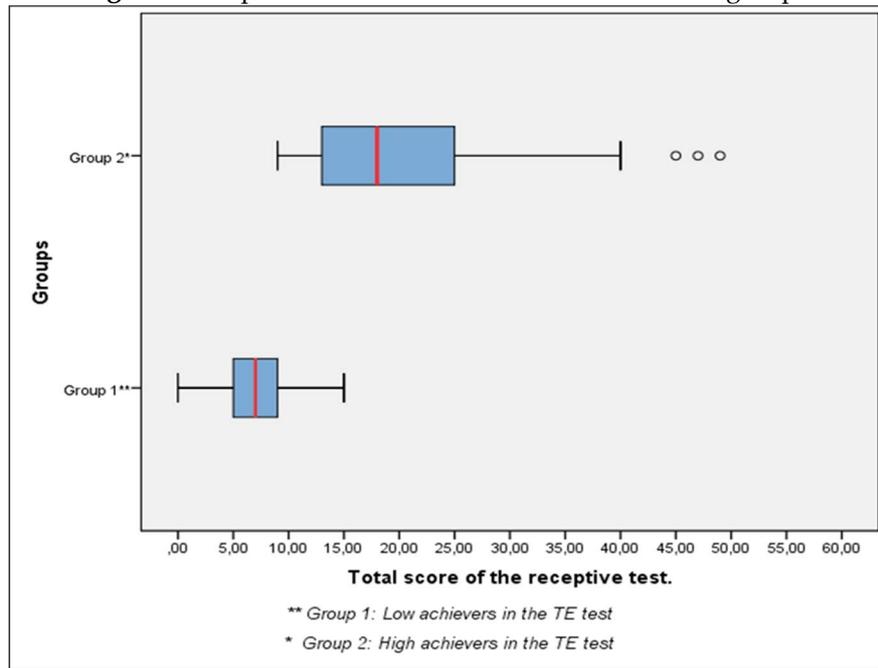



Figure 1 illustrates the main differences between low achievers and high achievers, in the receptive Arabic TE test, at the level of the total score of the receptive tests (scored out of 60) that contains a part for TEs (scored out of 30) and a part for English explanations (scored out of 30) of the thirty lexical items.

There are two boxplots. Each boxplot shows the results of a group. The two lines in the middle of the boxes represent group means; for group one, the mean is 7.05 (standard error: 0.27) whereas for group 2 the mean is 19.83 (standard error: 0.75).

The T-bars that extend from the boxes, on the right and on the left, are whiskers that represent the minimum and maximum scores in the overall receptive test for each group. The minimum score for group 1 was 00/60 and the maximum score was 15/60. However, for group 2, the minimum score was 09/60 and the maximum score was 49/60. The right whisker of group 2 boxplot does not extend to 49 because the values on its right were considered as outliers (extreme values) that were represented by small circles.

The left and right hinges of the boxes indicate respectively the 25th percentile and the 75th percentile. The 25th percentile indicates that 25 % of the cases have values below this level (25th percentile) and the 75th percentile shows that 25% of the cases have values above that level (75th percentile). This means that 50% of the cases are within the box. As we can see in figure 1, the box of group 1 is much shorter than the box of group 2. This indicates that group 1 had lower scores in the overall receptive test than group 2.

4.1.3. The 95% Confidence interval of the difference:

In modern statistics, confidence intervals (CI) play crucial role in data analysis and interpretation. A CI provides a range of population values with which a sample statistic is consistent at a given level (Commonly 95%). In the independent samples t-test table (Table 4), the lower bound was -14.36 and the upper bound was -11.19. Zero lies outside this interval. So, it could be concluded that there was a significant difference between the two groups.

4.1.4. The Effect Size (Eta Squared):

The effect size is a statistical technique with which one can check whether the difference between groups, in a given research, is statistically significant. It is, also, known as 'the strength of association'; a set of statistics that shows the relative magnitude of the differences between means, or the amount of the total variance in the dependent variable that is predictable from knowledge of the levels of the independent variable (Tabachnick & Fidell, 2013, p. 54).

According to Pallant (2011, p. 243), the Eta Squared for the Independent samples t-test can be obtained using the following Formula since SPSS does not generate it for this test:

$$\text{Partial Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

$$\text{Partial Eta squared} = \frac{(-15.90)^2}{(-15.90)^2 + (128 + 130 - 2)} = \frac{252.90}{252.90 + 256} = 0.50$$

(t = t-value calculated by SPSS in table 4; $N1$ = Number of low achievers; $N2$ = Number of high achievers).

Given our eta squared value of .50, we can conclude that there was a large effect, with a substantial difference in the receptive vocabulary test scores. 50 % of this difference (since partial eta squared is .50) may be attributed to TE use.

4.1.5. Summary:

The group statistics table revealed that the mean score of high achievers was much higher than the mean score of low achievers. The null finding of zero difference was outside the confidence interval. The CIs of the two groups' means showed no overlap and the partial eta squared value ($\eta 2$ = .50) indicated a large effect size and a substantial difference between the groups. For these mentioned reasons, the null hypothesis (there is no significant difference between learners who have a relatively higher extent of TE use and those who have a lower extent in terms of vocabulary knowledge) could be rejected and it can be concluded that there was a significant difference between the two groups in terms of vocabulary knowledge.

4.2. Translation equivalence and word learnability:

This section is devoted to comparing the participants' scores at the two tests of receptive vocabulary: In the first test, the participants were asked to identify 30 English lexical items using strategies that employ only English such as defining, giving synonyms, or putting the word in a clear context. In the second test, they were asked to give Arabic translation equivalents of the same lexical items. Both tests were marked out of 30. To compare the participants' scores at the two tests, a paired samples t-test was performed.

4.2.1. Overall significance and difference of means:

Table 5. Paired samples t-test

			Pair 1
Paired Differences	Mean		5.39147
	Std. Deviation		4.90035
	Std. Error Mean		.30508
	95 % Confidence Interval	Lower	4.79069
		Upper	5.99225
	t		17.672
	df		257
	Sig. (2-tailed)		.000

In this table (**Table 5**), the paired sample t-test output is divided into two parts. First, the mean difference is provided in the row labelled Mean. It is the numerator of the difference t formula and is obtained by subtracting the mean of one measurement from the mean of the other measurement. In this case, the mean of the English explanation scores (4.05) was subtracted from the mean of Arabic TEs scores (9.44), which gave a value of 5.39 (See **Table 5**). The second row, labelled "Std. Deviation", reports the standard deviation of the difference, which is part of the denominator of the difference t formula. The third row, labelled "Std. Error Mean", reports the standard error of the mean difference, which is obtained by dividing the standard deviation of the difference by the square root of N (N = Number of participants). The standard error of the mean difference is the complete numerator of the Difference t formula. The last two rows of this output block present the boundaries of the 95% confidence interval within which the true mean difference for the population is expected to fall.

Second, the paired samples t-test output presents the obtained t-value, degrees of freedom, and the two-tailed level of significance. In this case, the obtained t-value was 17.672 with 257 degrees of freedom (df = N-1). The p value was .000. Though SPSS reports a significance level of .000, it is generally inappropriate to report it as such, and reporting p < .001 is the preferred method (Gabrosek, 2013, p. 117; Green & Salkind, 2005, p. 159).

The other table generated by SPSS (Table 6) for the paired samples t-test provides us with means, number of participants, standard deviations, and standard error means.

Table 6. Paired Samples Statistics

		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Receptive Arabic TE test	9.4419	258	5.19189	.32323
	Receptive Only English test	4.0504	258	5.14927	.32058

The following boxplot shows us the differences between the scores of English explanations test and the TE test:

Figure 2. Boxplots of the two receptive tests (English explanations test and TEs test).

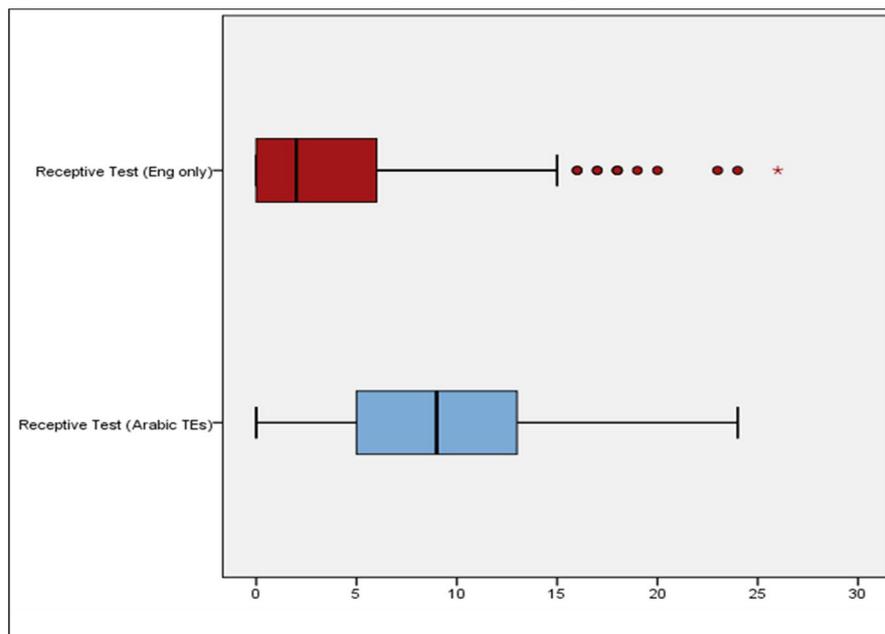



Figure 2. shows two boxplots: the boxplot at the top is for the scores of the English explanations test, and the boxplot at the bottom is for the Arabic TEs test. The lines inside the boxes represent the mean score for each test. The two whiskers of each boxplot show the lowest and highest scores in each test. The left side of each box shows the 25th percentile while the right side shows the 75th percentile.

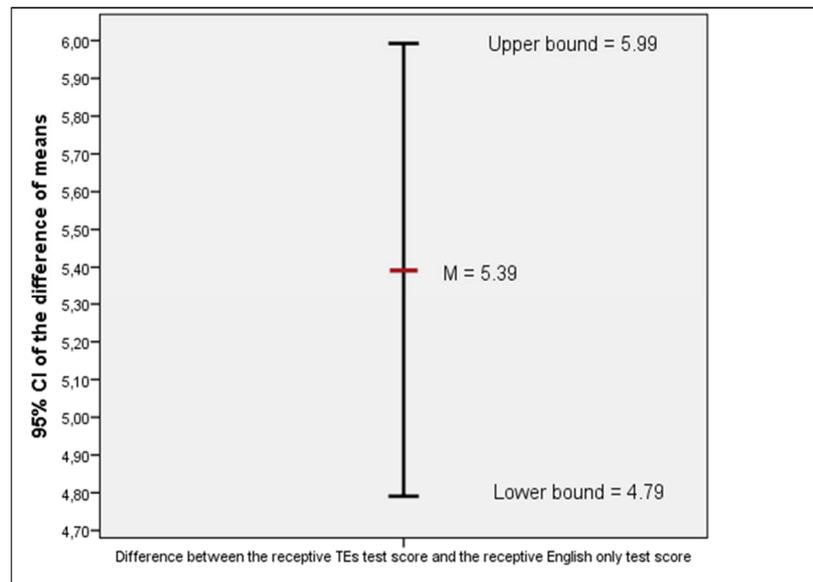
The boxplot, at the top, that illustrates the participants' scores at the English explanations test shows that the 25th percentile mingles with the bottom of the left whisker, at the level of zero, which means that 50% of the scores are between zero and the 75th percentile of the box. Also, near the right whisker, we can notice some circles that represent outliers which are extreme values in the score of this test. The star on the right is an extreme outlier. Hence, it could be concluded that the learners' scores in the English explanation test were very weak.

However, the boxplot, at the bottom, that illustrates the scores of the TEs test shows better results of the participants. The 50% of the scores situated inside the box, between the 25th percentile and the 75th percentile, are better than the scores of the other test.

To summarize, we can say that there was a significant difference in the scores between Arabic TEs test (M=9.44, SD=5.19) and the only-English explanations test (M=4.05, SD=5.14) with t(257) =17.672 and p ≤ .05 (2-tailed), giving a considerable mean difference of 5.39. These results suggest that participants learn English vocabulary through their Arabic TEs better than other strategies using only English such as defining, contextualizing, providing English synonyms or other similar ways. In other words, TEs have greater impact on word-learnability than other strategies employing only English.

4.2.2. The 95% Confidence interval of the difference:

Valued by experts and statisticians, confidence intervals remain controversial issue in the research field. This is particularly true for the proper use of CIs for within-subjects design and paired data. Therefore, Cumming and Finch (2005, p. 177) considered that the use of CIs for the two separate scores (e.g.: pre-test and post-test / two different conditions) is irrelevant and of no importance. Instead, they suggested interpreting the CI of the difference of means and noting whether this interval captures zero or not in order to test the null hypothesis. The following figure shows the CI of the difference between the two means of the scores of the English explanation test and the scores of the TEs test:

Figure 3. CI for the difference of means of the two tests.

The 95% CI for the difference between the two means of the English explanations test and the Arabic TEs test has an upper bound of 5.99 and a lower bound of 4.79. The mean 5.39 is situated in the middle with a margin of error MOE = ± 0.6. The width of this interval is quite narrow for a sample of 258 and a Standard Deviation of 4.90 which makes the results quite precise, because confidence intervals depend on the sample sizes and the standard deviations not on the means themselves (Newcombe, 2013, p. 104).

With this 95% CI [4.79,5.99] and since our null hypothesis assumes that there is no difference between using English explanation strategies and TE strategy (i.e. $\mu d = 0$), it can be concluded that there is a statistically significant difference between using the two strategies because the CI of the difference of means does not capture the zero-value.

4.2.3 The effect size (Eta Squared):

Although the results presented in the previous sections showed us that the difference we obtained was unlikely to occur by chance, it did not provide much information about the magnitude of the effect size.

Calculating the effect size for this test could help us check whether the difference between groups is statistically significant. It can be calculated using the following formula:

Partial Eta squared = t^2/t^2+**(N-1)** (Pallant, 2011, p. 247).

Partial Eta squared = $\dfrac{t^2}{t^2+(N-1)}$

Partial Eta squared = $\dfrac{(17.67)^2}{(17.67)^2+(258-1)}$ = $\dfrac{312.23}{312.23+257}$ = 0.55

(t = t-value calculated by SPSS in table 4.6; N = Number of participants)

The value of partial eta squared of .55 indicates a large effect size and a substantial difference between the English explanations test scores and Arabic TEs test scores.

4.2.4. Summary:

A paired-samples t-test was conducted to evaluate the impact of the intervention of Arabic TEs on word learnability. There was a statistically significant difference in scores from Arabic TEs test score (M = 9.44, SD = 5.19) to English explanations test scores (M = 4.05, SD = 5.14), t (257) = 17.67, p < .001 (two-tailed). The mean difference in the scores of the two tests was 5.39 with a 95% confidence interval ranging from 4.79 to 5.99. The eta squared statistic (.55) indicated a large effect size. All these results provided strong arguments to reject the null hypothesis and conclude that Arabic TEs, as a vocabulary learning strategy used by Tunisian EFL learners, has a greater impact on word learnability than other strategies employing only English in vocabulary learning.

5. Discussion

5.1. The impact of the strategy of translating on vocabulary knowledge:

All the statistical techniques used provided evidence that participants who were good at the Arabic TEs test obtained better scores in the receptive test which shows that the use of TE as a learning strategy has a very positive impact on the process of vocabulary learning and on Tunisian EFL learners' vocabulary knowledge.

These findings substantiate Sieh's research (2008) in which he found that learners gain more new FL words and access them in a quick manner thanks to L1 translation equivalents. Also, the results of this research correlate favourably with Liu (2008) and Khan (2016) who demonstrated through their researches that learners were significantly helped by their mother language in learning and understanding the meanings of new words and expressions of the TL. For this reason, Laufer & Girsai (2008) pointed to the urgent need to use translation and contrastive analysis in language learning.

However, the current study significantly differs from Alroe & Reinders' (2015) who showed through their research that studying vocabulary contextually is better than studying it through translation. Similar to Alroe & Reinders, Barzegar and Rahimy (2012) presented different results to this study when they found evidence that the learners' vocabulary knowledge could be better developed through reading tasks than translation.

5.2. The impact of the strategy of translating on word learnability:

The findings revealed that there was a significant difference between the participants' scores in the tests. The learners scored better at the Arabic TEs test with a mean score of 9.44 compared to the other test using only English which had a mean score of 4.05. Undoubtedly, the difference in the strategies required for dealing with the two tests was the important factor that resulted in the difference of means of the scores of the two tests. Hence, the bilingual method of learning vocabulary (Translating from English to Arabic) could be considered as a facilitator of the learning process of Tunisian learners of English at this level under study (9th grade). Indeed, FL learners, at this level of proficiency, find it easy to access and memorize lexical items using their translation equivalents. At this stage of vocabulary learning, lexical processing and production are based on the activation and mediation of L1 translations because no direct links exist between L2 words and concepts, or such links are very weak (Liu, 2008, p. 68). Therefore, Learners find this method easy and efficient to access, retrieve, and depict the core meaning of a word which gives them a sense of certainty about this meaning and use the word appropriately (Liu, 2008, p. 68).

These findings are in line with Nation's research (1982) and Prince's experiment (1996). Nation (1982) provided evidence that the translation of new words facilitates the vocabulary learning process. Prince (1996) confirmed this view by stating that even less proficient learners could recall more lexical items when learning in translation conditions. Moreover, the results of this study share a number of similarities with Milton & Masrai's researches (2015; 2015b) which revealed that translation equivalence has a considerable effect on word learnability (Milton & Masrai, 2015b) and that translation contributes with 23% of the variance in the vocabulary learning process (Milton & Masrai, 2015).

6. Conclusion

This study was conducted to explore the relationships between Translation Equivalence as a vocabulary learning strategy used by EFL learners to develop their vocabulary knowledge and facilitate word-learnability. There were statistically significant findings. The independent samples t-test was conducted to show the difference between low achievers and high achievers in the TE test at the level of vocabulary knowledge. The low achievers had a mean score of 7.05 in the overall score of the two receptive tests representing their whole vocabulary knowledge (60 points) and the high achievers had a mean score of 19.83, the fact that showed that high achievers in the TE test had a better vocabulary knowledge.

Besides, at the level of word-learnability, a paired samples t-test was run to compare the two sets of vocabulary learning strategies, the ones using only English and the one using TE, and evaluate their impact on word learnability. The findings of this test revealed that the TE strategy had greater impact on word learnability and showed that learners learn vocabulary better through translation; the mean score of Arabic TE test was 9.44 whereas the mean score of the English explanations test was 4.05.

In fact, students used TE to memorize and retrieve English words, to make up for their deficiencies in the target language, to self-assess and comprehend the tasks, and to facilitate their interaction with others. Therefore, translation Should not be banned from the EFL classroom. It should be treated as a pedagogical tool that complements existing approaches to foreign language learning/teaching and helps learners to develop their vocabulary and learn new words easily.

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